We claim:

1. A strain of the yeast *Saccharomyces cerevisiae* which can no longer grow on substrates with hexoses as the only carbon source, and whose ability of growing on a substrate with a hexose as the only carbon source is restored when a GLUT4 gene is expressed in this strain.

2. A strain of the yeast *Saccharomyces cerevisiae* as claimed in claim 1 as deposited at the Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH as DSM 14035, DSM 14036 or DSM 14037.

3. Generation of a strain of the yeast *Saccharomyces cerevisiae* as claimed in claim 1 or 2, obtainable by

a) providing a yeast,

b) eliminating the function of all hexose transporters of this yeast from a) by mutating or deleting the relevant genomic sequences.

4. A strain of the yeast *Saccharomyces cerevisiae* as claimed in one or more of claims 1 to 3, which comprises a GLUT4 gene.

5. A strain of the yeast *Saccharomyces cerevisiae* as claimed in claim 4, wherein a recombinant GLUT4 gene is under the functional control of a promoter which can be expressed in yeast.

6. A strain of the yeast *Saccharomyces cerevisiae* as claimed in claim 4 or 5, wherein the Glut4 gene is derived from humans, mice or rats.

7. A strain of the yeast *Saccharomyces cerevisiae* as claimed in one or more of claims 4 to 6 as deposited at the Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH as DSM 14038, DSM 14039 or DSM 14040.

8. The generation of a strain of the yeast *Saccharomyces cerevisiae* as claimed in one or more of claims 4 to 7, which is obtainable by

a) Providing a yeast as claimed in any of claims 1 to 3;

b) Transformation of the yeast of a) by a plasmid comprising a GLUT4 gene which is under the functional control of a promoter which can be expressed in yeast;

c) Plating a strain which has been transformed in accordance with b) onto a medium comprising glucose as the only carbon source;

d) Isolating a strain which has been plated in accordance with c) and which grows on this medium.

9. The generation as claimed in claim 8, wherein a GLUT4 gene from humans, mice or rats is used for the transformation.

10. The generation as claimed in claim 8 or 9, wherein a vector with a polynucleotide sequence as shown in SEQ ID No. 9 or 10 is used for the transformation.

11. A method which can be used for identifying a compound which increases or reduces the amount of a hexose transported by means of a Glut4 protein, with the following process steps:

a) Providing a strain of the yeast *Saccharomyces cerevisiae* as claimed in one or more of claims 4 to 10;

b) Determining the amount of a hexose which is taken up by this strain provided in accordance with a);

c) Providing a compound;

d) Contacting a strain of the yeast provided in accordance with a) with a compound provided in accordance with c);

e) Determining the amount of a hexose which is taken up into the yeast strain after contacting in accordance with d);

f) Identifying a compound which increases or reduces the amount of a hexose transported by means of a Glut4 protein by comparing the amount of the hexose taken up into the strain before and after contacting in accordance with d), which is determined in accordance with b) and e).

12. A pharmaceutical comprising a compound which has been identified and, if appropriate, further developed by a method as claimed in claim 11, and adjuvants for formulating the pharmaceutical for the treatment of diabetes or adiposity.

13. The use of a compound which has been identified and, if appropriate, further developed by a method as claimed in claim 11, for the preparation of a pharmaceutical for the treatment of diabetes or adiposity.

14. A method which can be used for identifying a compound which increases or reduces the amount of a hexose transported by means of a Glut1 protein, with the following process steps:

a) Providing a strain of the yeast *Saccharomyces cerevisiae* which can no longer grow on substrates with hexoses as the only carbon source and whose ability of growing on a substrate with a hexose as the only carbon source is restored when it expresses a Glut1 gene, this strain comprising a GLUT-1 gene under the functional control of a promoter which can be expressed in yeast;

b) Determining the amount of a hexose which is taken up by this strain provided in accordance with a);

c) Providing a compound;

d) Contacting a strain of the yeast provided in accordance with a) with a compound provided in accordance with c);

e) Determining the amount of a hexose which is taken up into the yeast strain after contacting in accordance with d);

f) Identifying a compound which increases or reduces the amount of a hexose transported by means of a Glut1 protein by comparing the amount of the hexose

taken up into the strain before and after contacting in accordance with d), which is determined in accordance with b) and e).

15. A method as claimed in claim 14, wherein, in accordance with a), a strain of the yeast Saccharomyces cerevisiae with the Strain Number DSM 14026, DSM 14027 or DSM14033 is provided.

16. A pharmaceutical comprising a compound which has been identified and, if appropriate, further developed by a method as claimed in claim 14 or 15, and adjuvants for formulating the pharmaceutical for the treatment of diabetes or adiposity.

17. The use of a compound which has been identified and, if appropriate, further developed by a method as claimed in claim 14 or 15, for the preparation of a pharmaceutical for the treatment of diabetes or adiposity.

18. A strain of the yeast *Saccharomyces cerevisiae* as deposited at the Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH under the Accession Number DSM 14026 or DSM 14027.

19. The generation of a strain of *Saccharomyces cerevisiae* as claimed in claim 18, which is obtainable by

a) Providing a yeast as claimed in any of claims 1 to 3;

b) Transformation of the yeast of a) with a plasmid comprising a polynucleotide sequence of SEQ ID No. 13 or 14;

c) Plating a strain which has been transformed in accordance with b) onto a medium comprising glucose as the only carbon source;

d) Isolating a strain which has been plated in accordance with c) and which grows on this medium.

20. A polynucleotide sequence encoding a GLUT1 protein with a substitution of valine with methionine at position 69 of the amino acid sequence.

21. A polynucleotide sequence as claimed in claim 20 comprising a sequence of SEQ ID Nr. 13.

22. A Glut1 protein encoded by a polynucleotide sequence as claimed in claim 20 or 21.

23. A polynucleotide sequence encoding a GLUT1 protein with a substitution of valine with methionine at position 70 of the amino acid sequence.

24. A polynucleotide sequence as claimed in claim 23 comprising a sequence of SEQ ID Nr. 14.

25. A Glut1 protein encoded by a polynucleotide sequence as claimed in claim 23 or 24.